

CLAIMS

1. A plant comprising in its nuclear genome at least one heterologous expression cassette or parts thereof comprising a nucleotide sequence encoding a trehalose biosynthetic enzyme under control of an inducible promoter.
2. A plant according to claim 1, wherein said plant has inducible drought-resistance.
3. A plant according to claim 1, wherein said heterologous expression cassette comprises a nucleotide sequence encoding a trehalose 6-phosphate synthase.
4. A plant according to claim 1, wherein said heterologous expression cassette comprises a nucleotide sequence encoding a trehalose 6-phosphate phosphatase.
5. A plant according to claim 1, wherein said nucleotide sequence encoding a trehalose biosynthetic enzyme is derived from a plant, a yeast or a bacteria.
6. A plant according to claim 1, wherein said nucleotide sequence encoding a trehalose biosynthetic enzyme comprises the *E. coli* *OtsA* gene or *OtsB* gene.
7. A plant according to claim 1 comprising a first heterologous expression cassette or parts thereof comprising a nucleotide sequence encoding a trehalose 6-phosphate synthase under control of an inducible promoter and a second heterologous expression cassette or parts thereof comprising a nucleotide sequence encoding a trehalose-6-phosphate phosphatase under control of an inducible promoter.
8. A plant according to claim 1, wherein said promoter is a chemically or wound inducible promoter.
9. A plant according to claim 8, wherein said promoter is the tobacco PR-1a promoter or the Arabidopsis PR-1 promoter.

10. Seeds of a plant according to claim 1 or of the progeny thereof.
11. A plant nuclear expression cassette comprising a nucleotide sequence encoding a trehalose biosynthetic enzyme under control of an inducible promoter capable of directing the expression of said nucleotide sequence in a plant.
12. A recombinant vector comprising a nucleotide sequence encoding a trehalose biosynthetic enzyme under control of an inducible promoter capable of directing the expression of said nucleotide sequence in a plant.
13. A plant comprising in its plastid genome at least one heterologous expression cassette or parts thereof comprising a nucleotide sequence encoding a trehalose biosynthetic enzyme under control of a promoter capable of directing the expression of said nucleotide sequence in a plastid of said plant.
14. A plant according to claim 13, wherein said heterologous expression cassette comprises a nucleotide sequence encoding a trehalose 6-phosphate synthase.
15. A plant according to claim 13, wherein said heterologous expression cassette comprises a nucleotide sequence encoding a trehalose 6-phosphate phosphatase.
16. A plant according to claim 13, wherein said nucleotide sequence encoding a trehalose biosynthetic enzyme is derived from a plant, a yeast or a bacteria.
17. A plant according to claim 13, wherein said nucleotide sequence encoding a trehalose biosynthetic enzyme comprises the *E. coli* *OtsA* gene or *OtsB* gene.
18. A plant according to claim 13, wherein said promoter comprises a transactivator-regulated promoter.
19. A plant according to claim 18 further comprising a heterologous nuclear expression cassette or parts thereof comprising a promoter operably linked to a nucleotide sequence

encoding said transactivator, wherein said promoter is capable of directing the expression of said transactivator in said plant, wherein said transactivator is fused to a plastid targeting sequence.

20. A plant according to claim 19, wherein said transactivator-regulated promoter comprises a T7 gene 10 promoter and said transactivator comprises a T7 RNA polymerase.

21. A plant according to claim 19, wherein said promoter capable of directing the expression of said transactivator in said plant is an inducible promoter, a tissue-specific promoter or a constitutive promoter.

22. A plant according to claim 21, wherein said inducible promoter is chemically or wound inducible.

23. A plant according to claim 22, wherein said promoter is the tobacco PR-1a promoter or the Arabidopsis PR-1 promoter.

24. A plant according to claim 13, wherein said promoter is transcribed by a RNA polymerase normally present in a plastid of said plant.

25. A plant according to claim 24, wherein said RNA polymerase is nuclear-encoded polymerase or a plastid-encoded polymerase.

26. A plant according to claim 25, wherein said promoter is a *clpP* promoter, a 16S r-RNA gene promoter, a *psbA* promoter or a *rbcL* promoter.

27. A plant according to claim 13 comprising a first expression cassette comprising a nucleotide sequence encoding a trehalose 6-phosphate synthase under control of a promoter capable of directing the expression of said nucleotide sequence in a plastid of said plant and second expression cassette comprising a nucleotide sequence encoding a trehalose-6-phosphate phosphatase under control of a promoter capable of directing the expression of said nucleotide sequence in a plastid of said plant.

28. A plant according to claim 13, wherein said expression cassette comprises a first nucleotide sequence encoding a trehalose 6-phosphate synthase and a second nucleotide sequence trehalose-6-phosphate phosphatase.

29. A plant according to claim 28, wherein said first and second nucleotide sequences are transcribed from a single promoter in an operon-like polycistronic gene, wherein said promoter is capable of directing the expression of said operon-like polycistronic gene in a plastid of said plant.

30. Seeds of a plant according to claim 13 or of the progeny thereof.

31. A plastid expression cassette comprising a nucleotide sequence encoding a trehalose biosynthetic enzyme under control of a promoter capable of directing the expression of said nucleotide sequence in a plastid of a plant.

32. A recombinant vector comprising a nucleotide sequence encoding a trehalose biosynthetic enzyme under control of a promoter capable of directing the expression of said nucleotide sequence in a plastid of a plant.

33. A plant comprising in its plastid genome two or more genes transcribed from a single promoter in an operon-like polycistronic gene, wherein said promoter is capable of directing the expression of said operon-like polycistronic gene in a plastid of said plant, wherein said operon-like polycistronic gene further comprises a heterologous intervening DNA sequence between two genes in said operon-like polycistronic gene.

34. A plant according to claim 33, wherein said intervening DNA sequence comprises a portion of a non-eukaryotic 5'UTR.

35. A plant according to claim 34, wherein said 5'UTR is derived from a virus.

36. A plant according to claim 32, wherein said intervening DNA is modified to prevent the formation of RNA secondary structures in a transcript of said operon-like polycistronic gene.

37. A plant according to claim 32, wherein said operon-like polycistronic gene comprises a gene comprising a nucleotide sequence encoding at least one trehalose biosynthetic enzyme.

38. Seeds of a plant according to claim 32 or of the progeny thereof.

39. A method of producing a plant according to claim 18 comprising:

pollinating a plant comprising a heterologous plastid expression cassette or parts thereof comprising a transactivator-mediated promoter operably linked to a nucleotide sequence encoding at least one trehalose biosynthetic enzyme with pollen from a plant comprising a heterologous nuclear expression cassette or parts thereof comprising a promoter operably linked to a nucleotide sequence encoding a transactivator capable of regulating said transactivator-mediated promoter, wherein said promoter operably linked to a DNA sequence coding for a transactivator is capable of directing the expression of said transactivator in said plant, wherein said transactivator is fused to a plastid targeting sequence;

recovering seed from the plant thus pollinated; and

cultivating a plant as described above from said seed.

40. A method for producing trehalose in a plant by expressing at least one heterologous nucleotide sequence encoding a trehalose biosynthetic enzyme under the control of an inducible promoter in the nuclear genome of said plant or by expressing at least one heterologous nucleotide sequence encoding a trehalose biosynthetic enzyme in a plastid of said plant.

41. A method comprising expressing at least one heterologous nucleotide sequence encoding a trehalose biosynthetic enzyme under the control of an inducible promoter in the nuclear genome of a plant or expressing at least one heterologous nucleotide sequence encoding a trehalose biosynthetic enzyme in a plastid of a plant, wherein the expression of said nucleotide sequence in said plant confers upon said plant a trait selected from the group consisting of drought-resistant, increased storage properties of the harvested plant, improved shelf-life of fruits, vegetables or flowers derived from said plant or stabilization of proteins expressed in said plant.

42. A method of expressing two or more genes from a single promoter in a plastid of a plant comprising introducing into the plastid genome of said plant a operon-like polycistronic gene comprising said two or more genes operably linked to a promoter capable of expressing said operon-like polycistronic gene in a plastid of said plant, wherein said operon-like polycistronic gene further comprises an intervening DNA sequence between two genes.